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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/931,493	08/16/2001	Maurice W. Peterson	99CR098/KE	3675

7590 11/10/2004

Rockwell Collins, Inc.
Attention: Kyle Eppele
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Cedar Rapids, IA 52498

EXAMINER	
FILE, ERIN M	

ART UNIT	PAPER NUMBER
2634	

DATE MAILED: 11/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/931,493	PETERSON ET AL.	
	Examiner	Art Unit	
	Erin M. File	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 September 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections – 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-20 are rejected under U.S.C. 103(a) as being unpatentable over Carney et al. in view of Kafadar et al.

Claim 1, Carney discloses a distortion correction technique comprising:

- Digital transmitter (figure 1, 16) that receives a clock signal and local oscillator signals (163, 164) to provide a broadband transmission signal
- Calibration circuitry (figure 1, 12) coupled to the transmitter which receives a correction signal from the predistortion processor and source signals (121) to generate an error estimate of the transmitter
- Predistortion circuitry (figure 1) coupled to the signal source (121), the transmitter (16) and the calibration circuitry (12). The predistortion circuitry receives the source signal (121) and uses the phase error estimate of the transmitter as an input and provides as an output the transmitter input signal as a function of the phase error estimate.

Carney does not disclose in his calibration circuitry the use of an angle of intersection between a desired transmitter envelope and an actual transmitter envelope. Carney also does not disclose a quadrature compensation system. However Kafadar teaches Phase-Shift Keying (PSK) modulation system having a quadrature calibration of a vector demodulator using a statistical approach for analysis and correction of received data. This statistical approach includes the use of each vector defined by an (I,Q) pair in a received data signal to define a linearly transformed circle (col 2 lines 18-26). These parameters determine calibration factors employed to adjust the received information (col 23 lines 29-33). It would be obvious to one skilled in the art at the time of invention to incorporate Kafadar's quadrature modulator teachings into Carney's modulator correction system because PSK is an efficient modulation scheme for digital transmission.

Claim 2, Carney further discloses circuitry configured to determine the values for a calibration look-up table that includes an amplitude distortion calibration procedure (column 4 lines 9-17) that provides the error (in the calibration signal) as a function of variation in the actual and transmitted signal.

Claim 3, inherits the limitations of claim 2. Further Kafadar teaches a vector demodulator where a statistical approach is used for the analysis and correction of received data. This circuit uses measurements taken from transmitted signals to determine semi-major and semi-minor axes of ellipses of waveforms (fig 5B,

112, 116) and uses these parameters to calibrate a demodulator. The ellipse defined by the measured points can be characterized by five parameters, the coordinates of the center E of the ellipse, the ratio of the lengths of the principal axes (fig 3, 22, 24) for the ellipse, the angle theta between the two principal axes, and the length of the major axis (22), which is related to the magnitude of the vectors defined by the points.

Claim 4, contains all of the limitations of Claim 3.

Claim 5, inherits the limitations of Claim 4, further Kafadar teaches estimate and adjustment of the gain of the I and Q channels (fig 5C, 123).

Claim 6, contains all of the limitations of Claim 5.

Claim 7, contains all of the limitations of Claim 4.

Claim 8, contains all of the limitations of Claim 5.

Claim 9, contains all of the limitations of Claim 5.

Claim 10, contains all of the limitations of Claim 2.

Claim 11, contains all of the limitations of Claim 2.

Claim 12, contains all of the limitations of Claim 5.

Claim 13, contains all of the limitations of Claim 6.

Claim 14, contains all of the limitations of Claim 6.

Claim 15, contains all of the limitations of Claim 6.

Claim 16, contains all of the limitations of Claim 6.

Claim 17, contains all of the limitations of Claim 6.

Claim 18, contains all of the limitations of Claim 6.

Claim 19, contains all of the limitations of Claim 6.

Claim 20, contains all of the limitations of Claim 6.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is (571)272-6040. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571)272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600